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ROPES & GRAY LLP
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1211 AVENUE OF THE AMERICAS
NEW YORK, NY 10036-8704

EXAMINER
MONFELDT, SARAH M

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2007*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-9,12,13,18-20,25 and 27-52* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-9,12,13,20,25 and 27-40, 46-52* is/are rejected.

7)☒ Claim(s) *1, 13, 18-19, 41-45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *30 July 2007*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION
Status of Claims

1.   This action is in reply to the Amendment/Response filed on 30 July 2007.

2.   Claims 1, 6, 7-9, 12, 20, 25 have been amended.

3.   Claims 27-52 have been added.

4.   Claims 3-5, 10-11, 14-17, 21-24, 26 have been canceled.

5.   Claims 1,2,6-9,12,13,18-20,25 and 27-52 are currently pending and have been examined.

Response to Amendment

6.   The rejection of claims 13-24 and 26 as being rejected under 35 USC 112, first paragraph, has been withdrawn.

7.   The rejection of claims 13-24 and 26 as being rejected under 35 USC 101, has been withdrawn.

8.   The rejection of claims 1-8 and 13-20 as being rejected under 35 USC 103(a) as being unpatentable over Lupien et al. in view of Keith has been withdrawn.

9.   The rejection of claims 9-12 as being rejection under 35 USC 103(a) as being unpatentable over Lupien in view of Keith and further in view of Gary has been withdrawn.

Information Disclosure Statement

10.   The Information Disclosure Statement filed on 30 July 2007 has been considered. An initialed copy of the Form 1449 is enclosed herewith.

Claim Objections

11.   Claims 1, 13, 18-19, 41-45 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only--, and -- cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 18-19, 41-45 not been further treated on the merits.

12.   Furthermore, please note claim 13 is considered an independent claim even though it depends from claim 1 since is directed to a different statutory class (Apparatus) than claim 1 (Method) from which it depends.

13.   Please also note that claims 18-19, 41-45 also include the limitations of claim 1 twice since these claims further depend from claim 13 which in turn depends from claim 1 and they also each depend on another claim which depends from claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

14.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

15.   Claims 1-2, 6-9, 12-13, 18-20, 25, 27-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

16.   The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

    a. The newly amended and newly added claims recite "a plurality" which does not find antecedent basis in the specification as filed. It appears that the terms is referring to "one or more" as recited by the original disclosure. Appropriate correction is required.

    b. The newly amended claims and newly added claims recite "at least in part" which recitation does not appear to find antecedent basis in the specification as filed. Appropriate correction is required.

    c. In at least claims 6 and 8 do not have antecedent basis for selecting the bid -offer liquidity spread as recited. Furthermore, the selecting of the bid-offer appears to be a function of itself in which is it further unclear how the selecting is actually accomplished.

    d. Further, the recitation of "proximity" in at least claims 6 and 8 do not find antecedent basis in the specification as filed. Appropriate correction is required.

    e. At least in claim 7, the recitation of "an average between a midpoint of the selected bid-offer liquidity spread and a last executed trade price" does not find antecedent basis with respect to the crossing price in the specification as filed. Appropriate correction is required.

    f. The recitation of "midpoint" at least in claim 8 does not find antecedent basis in the specification as filed. Appropriate correction is required.

g. The recitation of "a buy price that is lower than a price at which the matching of the plurality of orders occurs and a sale price that is higher than the price at which the matching of the plurality of orders occurs" at least in claim 12 does not find antecedent basis in the specification as filed. Appropriate correction is required.

h. The recitation of "first rules for requiring participation in a series of crossing markets, and second rules for requiring adherence to the crossing market rules" recited at least in claim 25 does not find antecedent basis in the specification as filed. Appropriate correction is required.

i. The recitation of "a portion" in at least claim 27 does not find antecedent basis in the specification as filed. Appropriate correction is required.

j. The recitation of "using liquidity provided by the market maker that provided the first bid-offer liquidity spread" at least in claims 1, 32 and 52 does not find antecedent basis in the claims as filed. Appropriate correction is required.

k. The recitation of "calculating an average between the first crossing price and at least one of a buying price of the first bid-offer liquidity spread and a selling price of the first bid-offer liquidity spread" at least in claim 32 does not find antecedent basis in the specification as filed. Appropriate correction is required.

l. The recitation of "in which the crossing price at which the order imbalance is filled is higher than the first crossing price" at least in claims 35 and 50 does not find antecedent basis in the specification as filed. Appropriate correction is required.

m. The recitation of "in which the crossing price at which the order imbalance is filled is lower than the first crossing price" at least in claims 36 and 51 does not find antecedent basis in the specification as filed. Appropriate correction is required.

n. The recitation of "in which filing at least in part the order imbalance comprises filing a portion of the order imbalance at the crossing price" in at least claim 39 does not find antecedent basis in the specification as filed. Appropriate correction is required.

Claim Rejections - 35 USC § 112

17.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18.   Claims 1-2, 6-9, 12-13, 18-20, 25, 27-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

   a. Vague & Indefinite:

     i. Claims 6 and 48 recite the term "proximity", which is vague and indefinite. The specification does not provide adequate guidance as to what this term is attempting to encompass. Appropriate correction is required.

     ii. Claims 6 and 48 are further vague and indefinite for the recitation of selecting a bid-offer liquidity spread. The selecting of the bid-offer appears to be a function of itself in which is it further·unclear how the selecting is actually accomplished since the claims as written require a midpoint of the selected bid offer liquidity spread. Is the second recitation of the selected "bid-offer liquidity spread" the same as that which is recited prior to it or is it intended to be another selected bid-offer liquidity spread? Appropriate correction and clarification is required.

     iii. The recitation of "midpoint of the BOLS" is vague and indefinite. Appropriate correction and clarification is required.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

21. Claims 1-2, 6-9, 12-13, 18-20, 25, 27-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rickard et al. (WO 98/12659).

Examiner's Note: The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative· of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Claim 1 –

As per claim 1, Rickard et al., at least at pg. 8, l. 24 through pg. 10, l. 32; pg. 1, ll. 20-26, pg. 6, l. 14-20, disclose *a method* having the limitations of:

- *receiving, in a crossing market, a plurality of bid-offer liquidity spreads from a plurality of market-markers;*
- *receiving, in the crossing market, a plurality of orders from a plurality of customers;*
- *matching at least in part the plurality of orders;*
- *determining, based on the matching of the orders, an order imbalance;*
- *selecting a bid-offer liquidity spread, from the plurality of bid-offer liquidity spreads;*
- *calculated, based on the selected bid-offer liquidity spread, a crossing price; and*
- *filling at least in part the order imbalance at the crossing price using liquidity provided by the market marker.*

Rickard et al. does not explicitly disclose that the market maker that provided the selected bid-offer liquidity spread uses that market makers own liquidity to fill the order imbalance. Richard et al. teach *optmization of allocation of public order imbalances to market makers* (see at least pg. 1, ll. 25-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method/system of Rickard et al. to include the market maker that provided the selected bid-offer liquidity spread uses that market makers own liquidity to fill the order imbalance. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. recognizes that residual imbalances in public orders are allocated to market makers and that the market makers as a group have an obligation to satisfy the residual imbalance in public orders at the opening price and that one way know in the art of accomplishing this is a round-robin assignment of residual contracts to each market-maker (see at least pg. 10 ll. 29-35 of Rickard et al.).

Claim 2 –

As per claim 2, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 6-7; pg. 15, l. 34, further discloses *a method* having the limitations of:

- *in which the crossing market comprises a crossing market for trading a fixed-income security.*

Claim 6 –

As per claim 6, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 8, ll. 16-18; pg. 8, ll. 24-32; pg. 6, ll. 14-20, pg. 6, l. 31 through pg. 7, l. 4, further discloses *a method* having the limitations of:

- *in which selecting the bid-offer liquidity spread comprises selecting the bid-offer liquidity spread based on a proximity of a midpoint of the selected bid-offer liquidity spread to a last-executed trade price.*

Claim 7 –

As per claim 7, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 21, l. 1-3, pg. 17, ll. 30-34, pg. 19, l. 19-21, pg. 22, ll. 14-32, further discloses *a method* having the limitations of:

- *in which calculating the crossing price comprises calculating an average between a midpoint of the selected bid-offer liquidity spread and a last executed trade price.*

Rickard et al. does not explicitly disclose calculating an average between a midpoint of the selected bid-offer liquidity spread and a last executed trade price. Rickard et al. however recognizes that at the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and seller and that the residual balance among public orders are required to be offset by assigning contra positions to the market makers. Rickard et al. further discloses that at the second stage of the Rickard invention, it will assign residual public order to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage (see at least pg. 13, ll. 19-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include an average between a midpoint of the selected BOLS and a last executed trade price. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. determines a set of implied volatilities that will maximize a weighted volume of offsetting public orders at the opening across all options series and that after determining the set of implied volatilities, at the second stage, the current position and desired target positions of each of the market makers is utilized and any residual public orders are assigned to individual market makers so as to minimize a cumulative measure of deviation between the desired target position and the actual position of each market maker after the assignment (see at least pg. 17, ll. 24-35 of Rickard et al.).

Claim 8 –

As per claim 8, Rickard et al. teaches the method of claim 37 as described above. Rickard et al., at least at pg. 21, l. 1-3, pg. 17, ll. 30-34, pg. 19, l. 19-21, pg. 22, ll. 14-32, further discloses *a method* having the limitations of:

- *in which calculating the second crossing price comprises calculating an average between a midpoint of the second bid-offer liquidity spread and the first crossing price.*

Rickard et al. does not explicitly disclose calculating an average between a midpoint of the selected bid-offer liquidity spread and a last executed trade price. Rickard et al. however recognizes that at the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and seller and that the residual balance among public orders are required to be offset by assigning contra positions to the market makers. Rickard et al. further discloses that at the second stage of the Rickard invention, it will assign residual public order to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage (see at least pg. 13, ll. 19-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include an average between a midpoint of the selected BOLS and a last executed trade price. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. determines a set of implied volatilities that will maximize a weighted volume of offsetting public orders at the opening across all options series and that after determining the set of implied volatilities, at the second stage, the current position and desired target positions of each of the market makers is utilized and any residual public orders are assigned to individual market makers so as to minimize a cumulative measure of deviation between the desired target position and the actual position of each market maker after the assignment (see at least pg. 17, ll. 24-35 of Rickard et al.).

Claim 9 –
As per claim 9, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 10, l. 23 through pg. 11,l. 28; pg. 12, l. 27-30; pg. 14, ll. 23-27, further discloses *a method* having the limitations of:
- *incentivizing the plurality of market makers to provide liquidity to the crossing- market by causing additional information to be provided to at least one market maker that provides liquidity, in which the additional information comprises at least one of:*
  - *a size of the crossing market,*
  - *an amount of the order imbalance, and*
  - *names of participating market makers.*

Claim 12 –

As per claim 12, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 20, ll. 18-24, further discloses *a method* having the limitations of:

- *incentivizing the plurality of market makers to provide liquidity to the crossing market by providing to at least one market maker that provides liquidity at least one of:*
    - *a buy price that is lower than a price at which the matching of the plurality of orders occurs, and*
    - *a sale price that is higher than the price at which the matching- of the plurality of orders occurs.*

Claim 13 –

As per claim 13, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 8, l. 24 through pg. 10, l. 32; pg. 1, ll. 20-26, pg. 6, ll. 14-20, further discloses *an apparatus comprising a computing device operable to perform the method of claim 1.*

Claim 25 –

As per claim 25, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 10, ll. 27-32, further discloses *a method* having the limitations of:

- *causing crossing market rules that govern trading in the crossing market to be provided to the plurality of market makers, in which the crossing- market rules comprise at least one of:*
    - *first rules for requiring participation in a series of crossing markets, and*
    - *second rules for requiring adherence to the crossing market rules.*

Claim 27 –

As per claim 27, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 9, l. 6 through pg. 10, l. 32, further discloses *a method* having the limitations of:

- *in which the plurality of orders comprise a plurality of buy orders and a plurality of sell orders; and*
- *in which the order imbalance comprises one of:*
    - *a portion of the plurality of buy orders, and*
    - *a portion of the plurality of sell orders.*

Claim 28 –

As per claim 28, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 9, ll. 3-11, further discloses *a method* having the limitations of:

- *in which at least one of the plurality of market makers comprises at least one of:*

     o   *a dealer, and*

     o   *a trader.*

Claim 29 –

As per claim 29, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 12, II. 20-30, further discloses *a method* having the limitations of:

- *in which the liquidity provided by the market maker comprises at least one of:*
- *volume provided by the market maker; and*
- *volume provided by at least one customer of the market maker.*

Claim 30 –

As per claim 30, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 13, II. 19-33, further discloses *a method* having the limitations of:

- *in which matching at least in part the plurality of orders comprises:*
  - o *selecting a first bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
  - o *calculating, based on the first bid-offer liquidity spread, a first crossing price; and*
  - o *filling the matched orders at the first crossing price.*

Claim 31 –

As per claim 31, Rickard et al. teaches the method of claim 30 as described above. Rickard et al., at least at pg. 19, II. 1-21, further discloses *a method* having the limitations of:

- *in which selecting the bid-offer liquidity spread comprises selecting the first bid-offer*
- *liquidity spread;*
- *in which calculating, based on the selected bid-offer liquidity spread, the crossing price*
- *comprises calculating, based on the first bid-offer liquidity spread, a second crossing price; and*
- *in which filling at least in part the order imbalance comprises filling at least in part the*
- *order imbalance at the second crossing price using liquidity provided by the marke t maker that provided the first bid-offer liquidity spread.*

Claim 32 –

As per claim 32, Rickard et al. teaches the method of claim 31 as described above. Rickard et al., at least at pg. 21, I. 1-3, pg. 17, II. 30-34, pg. 19, I. 19-21, pg. 22, II. 14-32, further discloses *a method* having the limitations of:

- *in which calculating the second crossing price comprises calculating an average between the first crossing price and at least one of:*

       o   *a buying price of the first bid-offer liquidity spread, and*

       o   *a selling price of the first bid-offer liquidity spread.*

Claim 33 –

As per claim 33, Rickard et al. teaches the method of claim 30 as described above. Rickard et al., at least at pg. 14, l. 29; pg. 15, l. 11, further discloses *a method* having the limitations of:

- *in which selecting the bid-offer liquidity spread comprises selecting a second bid-offer*
- *liquidity spread;*
- *in which calculating, based on the selected bid-offer liquidity spread, the crossing price*
- *comprises calculating, based on the second bid-offer liquidity spread, a second crossing price; and*
- *in which filling at least in part the order imbalance comprises filling at least in part the*
- *order imbalance at the second crossing price using liquidity provided by the market maker that provided the second bid-offer liquidity spread.*

Claim 34 –

As per claim 34, Rickard et al. teaches the method of claim 33 as described above. Rickard et al., at least at pg. 14, l. 29; pg. 15, l. 11, further discloses *a method* having the limitations of:

- *in which filling at least in part the order imbalance at the second crossing price comprises filling a first portion of the order imbalance at the second crossing price using liquidity provided by the market maker that provided the second bid-offer liquidity spread;*
- *the method further comprising filling a second portion of the order imbalance against at least one unmatched order at a price calculated based on the second bid-offer liquidity spread.*

Claim 35 –

As per claim 35, Rickard et al. teaches the method of claim 30 as described above. Rickard et al. further discloses *a method* having the limitations of:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders;* (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)
- *in which the order imbalance comprises a portion of the plurality of buy orders; and* (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)

Rickard et al. does not explicitly state *in which the crossing price at which the order imbalance is filled is higher than the first crossing price.* Rickard et al. however recognizes that a options exchange may implement only the first stage to determine the opening price for each option but decide to allocate

residual balances using the present round-robin assignment. (see at least pg. 15, l. 18, pg. 10 l. 34 through pg. 11, l. 11) It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include *the crossing price at which the order imbalance is filled is higher than the first crossing price.* One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. notes that the round-robin method assignment often results in undesirable in inefficient allocations, one example is that the market maker who is short delta might like to be a buyer of options contracts and another market maker who is long may want to increase his long position, and that no attempt is made to meet the market makers desired positions with round-robin assignment (see at least pg. 10, l. 27 through pg. 11, ll. 12 of Rickard et al.).

Claim 36 –

As per claim 36, Rickard et al. teaches the method of claim 30 as described above. Rickard et al further discloses *a method* having the limitations of:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders;* *(see at least* pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)
- *in which the order imbalance comprises a portion of the plurality of sell orders; and (see at least* pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)

Rickard et al. does not explicitly state *in which the crossing price at which the order imbalance is filled is lower than the first crossing price.* Rickard et al. however recognizes that a options exchange may implement only the first stage to determine the opening price for each option but decide to allocate residual balances using the present round-robin assignment. (see at least pg. 15, l. 18, pg. 10 l. 34 through pg. 11, l. 11) It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include *the crossing price at which the order imbalance is filled is higher than the first crossing price.* One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. notes that the round-robin method assignment often results in undesirable in inefficient allocations, one example is that the market maker who is short delta might like to be a buyer of options contracts and another market maker who is long may want to increase his long position, and that no attempt is made to meet the market makers desired positions with round-robin assignment (see at least pg. 10, l. 27 through pg. 11, ll. 12 of Rickard et al.).

Claim 37 –

As per claim 37, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 8, l. 24 through pg. 10 l. 32; pg. 9, l. 13-25; pg. 10 l. 5-6, 30-32; pg. 11, l. 23-34, 35 through pg. 12 l. 4; pg. 1, l. 20-26; pg. 6, l. 14-20; pg. 13, l. 30-34; pg. 14, l. 30-35; pg. 17, l. 31 through pg. 18, l. 1; pg. 19, l. 1-2, further discloses *a method* having the limitations of:

- *in which the selected bid-offer liquidity spread comprises a first bid-offer liquidity spread;*
- *in which the crossing price comprises a first crossing price; and*
- *in which filling at least in part the order imbalance comprises filling a first portion of the order imbalance at the first crossing price;*
- *the method further comprising, after filling the first portion of the order imbalance:*
- *selecting a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculating, based on the second bid-offer liquidity spread, a second crossing price; and*
- *filling a second portion of the order imbalance at the second crossing price.*

Claim 38 –

As per claim 38, Rickard et al. teaches the method of claim 37 as described above. Rickard et al., at least at pg. 9, l. 13-25; pg. 10 l. 5-6, 30-32; pg. 11, l. 23-34, 35 through pg. 12 l. 4;, further discloses *a method* having the limitations of:

- *in which filling the second portion of the order imbalance at the second crossing price comprises filling the second portion of the order imbalance at the second crossing price using at least one of:*
- *liquidity provided by the market maker that provided the second bid-offer liquidity spread, and*
- *at least one unmatched order.*

Claim 39 –

As per claim 39, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 8, l. 24 through pg. 10, l. 32; pg. 1, ll. 20-26, pg. 6, l. 14-20, further discloses *a method* having the limitations of:

- *in which filling at least in part the order imbalance comprises filling a portion of the order imbalance at the crossing price;*
- *the method further comprising:*
- *calculating at least one additional crossing price; and*
- *filling a remaining portion of the order imbalance at the at least one additional crossing price using at least in part liquidity provided by at least one of the plurality of market makers.*

Claim 40 –

As per claim 40, Rickard et al. teaches the method of claim 1 as described above. Rickard et al., at least at pg. 22, ll. 14-32, further discloses *a method* having the limitations of:

- *in which calculating the crossing price comprises calculating the crossing price based on the selected bid-offer liquidity spread and a last-executed trade price, in which the a last-executed trade price is calculated based on a bid-offer liquidity spread other than the selected bid-offer liquidity spread.*

Claim 46 –

As per claim 46,Rickard et al., at least at pg. 8, l. 24 through pg. 10, l. 32; pg. 1, ll. 20-26, pg. 6, l. 14-20, discloses *a method* having the limitations of:

- *receiving, in a crossing market, a bid-offer liquidity spread from a market-marker;*
- *receiving, in the crossing market, a plurality of orders from a plurality of customers;*
- *matching at least in part the plurality of orders;*
- *determining, based on the matching of the orders, an order imbalance;*
- *calculating, based on the bid-offer liquidity spread, a crossing price; and*
- *filling at least in part the order imbalance at the crossing price using liquidity provided by the market maker.*

Claim 47 –

As per claim 47, Rickard et al., at least at pg. 8, l. 24 through pg. 10, l. 32; pg. 1, ll. 20-26, pg. 6, l. 14-20, pg. 8, l. 24 through pg. 10 l. 32; pg. 9, l. 13-25; pg. 10 l. 5-6, 30-32; pg. 11, l. 23-34, 35 through pg. 12 l. 4; pg. 1, l. 20-26; pg. 6, l. 14-20; pg. 13, l. 30-34; pg. 14, l. 30-35; pg. 17, l. 31 through pg. 18, l. 1; pg. 19, l. 1-2, discloses *a method* having the limitations of:

- *receiving from a plurality of market-markers a plurality of bid-offer spreads;*
- *receiving from a plurality of customers a plurality of orders, in which the orders are associated with respective bid-offer spreads;*
- *after receiving the plurality of bid-offer spreads and the plurality of orders:*
- *selecting a first bid-offer spread from the plurality of bid-offer spreads;*
- *calculating a first crossing price based on the first bid-offer spread;*
- *matching orders associated with the first bid-offer spread at the first crossing price;*
- *determining an order imbalance based on the matching of the orders;*
- *selecting a second bid-offer spread from the plurality of bid-offer spreads;*
- *calculating a second crossing price based on the second bid-offer spread; and*
- *filling at least in part the order imbalance at the second crossing price*

- *using at least one order associated with the second bid-offer spread.*

Claim 48 –

As per claim 48, Rickard et al. teaches the method of claim 47 as described above. Rickard et al., at least at pg. 8, II. 16-18; pg. 8, II. 24-32; pg. 6, II. 14-20, pg. 6, I. 31 through pg. 7, I. 4,, further discloses a *method* having the limitations of:

- *in which selecting the second bid offer spread comprises selecting the second bid-offer spread based on a proximity of a midpoint of the second bid-offer spread to a last-executed trade price, in which the last-executed trade price is calculated based on the first bid-offer spread.*

Claim 49 –

As per claim 49, Rickard et al. teaches the method of claim 47 as described above. Rickard et al., at least at pg. 21, I. 1-3, pg. 17, II. 30-34, pg. 19, I. 19-21, pg. 22, II. 14-32, further discloses a *method* having the limitations of:

- *in which calculating the second crossing price comprises calculating an average between a midpoint of the second bid-offer spread and a last-executed trade price, in which the last-executed trade price is calculated based on the first bid-offer spread.*

Rickard et al. does not explicitly disclose calculating *an average between a midpoint of the second bid-offer spread and a last-executed trade price, in which the last-executed trade price is calculated based on the first bid-offer spread.* Rickard et al. however recognizes that at the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and seller and that the residual balance among public orders are required to be offset by assigning contra positions to the market makers. Rickard et al. further discloses that at the second stage of the Rickard invention, it will assign residual public order to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage (see at least pg. 13, II. 19-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include an average between a midpoint of the selected BOLS and a last executed trade price. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. determines a set of implied volatilities that will maximize a weighted volume of offsetting public orders at the opening across all options series and that after determining the set of implied volatilities, at the second stage, the current position and desired target positions of each of the market makers is utilized and any residual public orders are assigned to individual market makers so as to minimize a cumulative measure of

deviation between the desired target position and the actual position of each market maker after the assignment (see at least pg. 17, II. 24-35 of Rickard et al.).

Claim 50 –

As per claim 50, Rickard et al. teaches the method of claim 47 as described above. Rickard et al. further discloses a *method* having the limitations of:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders; (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)*
- *in which the order imbalance comprises a portion of the plurality of buy orders; (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)*

Rickard et al. does not explicitly state *in which the second crossing price at which the order imbalance is filled is higher than the first crossing price.* Rickard et al. however recognizes that a options exchange may implement only the first stage to determine the opening price for each option but decide to allocate residual balances using the present round-robin assignment. (see at least pg. 15, l. 18, pg. 10 l. 34 through pg. 11, l. 11) It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include *the crossing price at which the order imbalance is filled is higher than the first crossing price.* One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. notes that the round-robin method assignment often results in undesirable in inefficient allocations, one example is that the market maker who is short delta might like to be a buyer of options contracts and another market maker who is long may want to increase his long position, and that no attempt is made to meet the market makers desired positions with round-robin assignment (see at least pg. 10, l. 27 through pg. 11, II. 12 of Rickard et al.).

Claim 51 –

As per claim 51, Rickard et al. teaches the method of claim 47 as described above. Rickard et al., further discloses a *method* having the limitations of:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders; (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)*
- *in which the order imbalance comprises a portion of the plurality of sell orders; (see at least pg. 9, l. 6 through pg. 10 l. 32, pg. 5, l. 13-14)*

Rickard et al. does not explicitly state *in which the second crossing price is lower than the first second price.* Rickard et al. however recognizes that a options exchange may implement only the first stage to

determine the opening price for each option but decide to allocate residual balances using the present round-robin assignment. (see at least pg. 15, l. 18, pg. 10 l. 34 through pg. 11, l. 11) It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the system/method of Rickard et al. to include *the crossing price at which the order imbalance is filled is higher than the first crossing price.* One of ordinary skill in the art at the time of the invention would have been motivated to expand the method/system of Rickard et al. in this way since Rickard et al. notes that the round-robin method assignment often results in undesirable in inefficient allocations, one example is that the market maker who is short delta might like to be a buyer of options contracts and another market maker who is long may want to increase his long position, and that no attempt is made to meet the market makers desired positions with round-robin assignment (see at least pg. 10, l. 27 through pg. 11, ll. 12 of Rickard et al.).

Claim 52 –

As per claim 52, Rickard et al. teaches the method of claim 47 as described above. Rickard et al., at least at pg. 19, ll. 5-21, further discloses *a method* having the limitations of:

- *further comprising filling at least in part the order imbalance at a price calculated based on the first bid-offer spread using liquidity provided by the market maker that provided the first bid-offer spread.*

Response to Arguments

22.   Applicant's arguments with respect to claims 1,2,6-9,12,13,18-20,25 and 27-52 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah M. Monfeldt whose telephone number is (571)270-1833. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm (EST) ALT Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Abdi can be reached on (571)272-6702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Sarah M. Monfeldt
Patent Examiner, AU 3692
571-270-1833
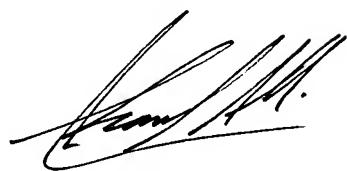
Kambiz Abdi
AU 3692, SPE

KAMBIZ ABDI
SUPERVISORY PATENT EXAMINER